

## **REMARKS**

The present Amendment and Response is intended to be fully responsive to all points of objections and/or rejections being raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Applicants assert that the present invention is new, non-obvious and useful. Prompt reconsideration and allowance of the claims are respectfully requested.

### **Status of the Claims**

Claims 1-3 and 6-19 are pending in the application.

### **Remarks to Claim Rejections**

#### ***Claim Rejections - 35 USC §103***

In the Office Action, the Examiner rejected claims 1, 3, 6, 8-11, 13-16 and 19 under 35 U.S.C. §103(a) as being unpatentable over Wang et al. (*Journal of Material Science: Materials in Electronics* 6 (1995) 311-324, “Wang”) in view of Cheng et al. (US 2002/0168864, “Cheng”). In particular, upon admitting that Wang does not teach using a SiGe-on-Insulator (SGOI) structure as a substrate (upon which to grow a digital alloy of Si and Ge), the Examiner contends that it would have been obvious to one of ordinary skill in the art to use the method taught by Cheng to fabricate a field-effect-transistor (FET) structure on a SGOI substrate, and the motivation for combining Wang and Cheng is for high mobility (of electrons and holes).

Applicants respectfully disagree with the Examiner’s rejections.

According to MPEP 2143, in order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Applicants

would like to point out that the Examiner's above claim rejections fail to meet the basic criteria for establishing a *prima facie* case of obviousness.

Independent claims 1, 8, and 13 recite a digital alloy of SiGe, or forming a digital alloy of SiGe, on top of a SGOI substrate. The Examiner contends that claims 1, 8, and 13 are obvious by combining Wang and Cheng, and the motivation for combining Wang and Cheng is to produce a device with high mobility of electrons and holes. Applicants respectfully disagree with the Examiner's contention.

Applicants assert that the above alleged motivation, to the most, would have led a person skilled in the art to fabricate a FET directly on top of the SGOI substrate, as is contended by the Examiner as well, because this would allow the FET to be made of films (strained-Si, strained-Si<sub>1-x</sub>Ge<sub>x</sub>, or strained-Ge, etc.) whose stresses may be enhanced by directly growing on top of the SGOI substrate. However, fabricating a FET on top of a SGOI substrate shall by no means be confused with growing a digital alloy of SiGe on top of the SGOI substrate, which has nothing to do with, and has no direct link to, producing a device having high mobility of electrons and/or holes simply because of the SGOI substrate (for the reasons described below). In other words, in no way the fact, that a FET may be fabricated on top of a SGOI substrate to have high mobility of electrons and/or holes, may be interpreted or construed as a motivation of growing a digital alloy of SiGe on top of the SGOI substrate. In addition, the Examiner has failed to show any other motivations to grow a digital alloy of SiGe on top of a SGOI substrate.

In the case that a digital alloy of SiGe is grown on top of a SGOI substrate, a FET is usually fabricated from a film subsequently grown on top of the digital alloy. The film is not directly on top of, and is separated from, the SGOI substrate. Therefore, mobility of electrons and holes of the FET will largely depend on the quality (such as tensile or compressive stress level) of the film, which may be affected by the digital alloy directly underneath but not necessarily by the SGOI substrate. In fact, if high mobility is the true motivation, a person skilled in the art would prefer NOT to grow a digital alloy of SiGe on top of the SGOI, but rather to fabricate the FET directly on top of the SGOI in order to enhance the stress in the FET channel made possible by the SGOI substrate. In summary, the SGOI substrate will have little or no effect on the mobility of electrons and/or holes if

the FET is fabricated on top of the digital alloy of SiGe, therefore provides no motivation at all to grow the digital alloy of SiGe on top of the SGOI substrate, as such motivation is specifically required by MPEP 2143 for a *prima facie* case of obviousness rejection.

In view of above, Applicants respectfully submit that independent claims 1, 8 and 13 include distinctive elements that are not taught, suggested, or even implied by prior art references of record, in particular by Wang, Cheng, Fukuda et al. (US 2004/0004271, “Fukuda”), and Werner et al. (US 2004/0140531, “Werner”), alone or in combination. Therefore, Applicants respectfully submit that claims 1, 8, and 13 are patentable.

Claims 3 and 6 depend from claim 1; claims 9-11 depend from claim 8; and claims 14-16 and 19 depend from claim 13. By their respective dependencies, claims 3, 6, 9-11, 14-16, and 19 include all the distinctive elements of claims 1, 8, and 13 respectively, in addition to other distinct elements and/or features. Therefore, claims 3, 6, 9-11, 14-16, and 19 are patentable for at least the reasons as described above with regard to claims 1, 8, and 13.

In the Office Action, the Examiner rejected claims 7, 12, and 17 under 35 U.S.C. §103(a) as being unpatentable over Wang in view of Cheng, and further in view of Fukuda.

Claims 7, 12, and 17 depend from claims 1, 8, and 13 respectively and thus include all the distinctive elements of claims 1, 8, and 13, in addition to other distinct elements and/or features. Therefore, claims 7, 12, and 17 are patentable for at least the reasons as described above with regard to claims 1, 8, and 13.

In the Office Action, the Examiner rejected claims 2 and 18 under 35 U.S.C. §103(a) as being unpatentable over Wang in view of Cheng, and further in view of Werner.

Claims 2 and 18 depend from claims 1 and 13, respectively, and thus include all the distinctive elements of claims 1 and 13, in addition to other distinct elements and/or features. Therefore, claims 2 and 18 are patentable for at least the reasons as described above with regard to claims 1 and 13.

In view of the above remarks, Applicants respectfully request that rejections of claims 1-3 and 6-19 under 35 U.S.C. §103(a) be withdrawn.

**Conclusion**

In view of the preceding remarks, Applicants respectfully submit that all pending claims are now in condition for allowance. Favorable reconsideration and allowance of the claims are respectfully requested.

No fees are believed to be due in connection with this paper. However, if there is any such fee due, please charge any such fee to the deposit account No. 09-0458.

Respectfully submitted,

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